

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

2520 Venture Oaks, Suite 350
Sacramento, CA 95833
(916) 274-5721
FAX (916) 274-5743
www.dir.ca.gov/oshsb

**FINAL STATEMENT OF REASONS****CALIFORNIA CODE OF REGULATIONS**

TITLE 8: Chapter 4, Subchapter 5, Article 3, Section 2320.2
Low Voltage Electrical Safety Orders

The Use of Barriers and Insulated Gloves

There are no modifications to the information contained in the Initial Statement of Reasons.

SUMMARY AND RESPONSE TO ORAL AND WRITTEN COMMENTS**I. Written Comments**

Mr. Frank R. Stephens, Public Relations and Government Affairs Director, Western Electrical Contractors Association, Inc. by letter dated July 27, 2000. (The concerns expressed by Mr. Stephens are addressed as five separate comments below.)

Comment No. 1

Mr. Stephens states that Western Electrical Contractors Association, Inc. represents more than 115 electrical contractors and 6000 employees. Mr. Stephens commented that the proposed amendment to Section 2320.2, subsection (a)(3) to substitute the word "approved" for "suitable" is significant because what is suitable to one electrician may not be to another. The type of glove that makes one electrician believe he is safe may not for another. Under the proposed standard the freedom of choice for personal safety will be taken away and mandated by the State.

Response

In Section 2300 (Definitions) of the Low-Voltage Electrical Safety Orders (LVESO), the term "suitable" is defined as "capable of performing with safety the particular function specified in these Orders." In order to avoid the use of inferior insulating gloves and protect employees from hazardous electrical currents, such gloves should be listed, labeled or certified as conforming to applicable governmental or other nationally recognized standards.

The use of gloves that are inferior or not rated for the voltages involved can have serious and/or lethal consequences for employees that believe they are insulated from hazardous electrical current. As stated in Section 2305.4 of the LVESO, when the term "approved" is used it means in part that the product (insulating gloves) has been approved, listed, labeled, or certified as conforming to applicable governmental or other recognized standards. The proposed amendment ensures that appropriate insulating gloves are used that will allow employees to perform their

duties safely. Therefore, the Board does not believe modification to the proposal is necessary as a result of this comment.

Comment No. 2

Mr. Stephens commented that the State not only wants to dictate the type of hot glove the electrician will use, but by changing the standard from "300-volts nominal" to "250-volts to ground" requires that hot gloves will be used on all lighting, not just on the main boards.

Response

Insulated gloves are not required while working on "all lighting" systems. Subsection (a)(1) requires that responsible supervision must first determine that the work is to be performed while the equipment or systems are energized. Advisory committee deliberations determined that in most cases, and whenever possible, work is done while electrical systems are deenergized. Insulated gloves are not required while working on deenergized systems.

Existing Section 2320.2(a)(3) requires suitable insulated gloves for working on equipment energized at more than 300-volts, nominal. Voltage, nominal is defined in Section 2300 as "a nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 480Y/277, 600 etc.)." Lighting fixtures connected to 277-volt conductors are derived from 480/277-volt systems and, therefore, exceed the 300-volts nominal threshold in subsection (a)(3) because of the 480-volt phase to phase exposure. The existing regulation already requires the use of insulated gloves when working on energized lighting systems connected to 277-volt systems. The regulation simply clarifies that the use of insulated gloves is required when working on a hot or energized 277-volt leg or circuit derived or connected to a 480/277-volt system, however, there is no new equipment imposed by this regulation. Therefore, the Board does not believe modification to the proposal is necessary as a result of this comment.

Comment No. 3

Mr. Stephens stated that under the cost estimates of the proposed action, it is claimed that there is no "significant impact on businesses." Currently, small businesses designate one or two employees to work on voltages more than 300-volts and supply those employees with the needed safety equipment. Under the proposal, all employees will now need to be supplied with additional safety equipment, specifically hot gloves that will reduce their productivity and that must be replaced periodically. Mr. Stephens indicated that the production of electricians is reduced because the gloves cannot be worn for extended periods.

Response

The response to Comment No. 2 outlines that there is no new equipment imposed by this regulation. With respect to comments related to worker productivity, consideration must be given to the many serious accidents and fatality case histories that occurred to victims while working on 480/277-volt circuits. Furthermore, the rulemaking file contains reports of numerous serious and fatal accidents to electricians working on 480/277-volt systems. The accident records clearly demonstrate the need for protective gloves while working on such energized systems.

The Board does not believe modification to the proposal is necessary as a result of this comment.

Comment No. 4

Mr. Stephens commented that the added cost and expense of the proposal produce no significant gain in safety and the public will pay higher costs for the work performed.

Response

See the response to comments No. 2 and 3.

Comment No. 5

Mr. Stephens states that use of the word "authorized" person as used in subsection (b)(6) is ambiguous.

Response

Subsection (b)(6) is not proposed for amendment and is outside the scope of this proposal. However, the term "authorized" is defined in the LVESO Section 2300 and means, "A qualified person delegated to perform specific duties under the conditions existing."

The Board thanks Mr. Stephens for his comments and participation in the Board's rulemaking process.

Mr. Steve Hosler (not representing any particular agency, organization or employer), by written comment submitted at the August 17, 2000 Public Hearing.

Mr. Hosler submitted Table 3-3.9.1 (Hazard Risk Category Classifications) from the National Fire Protection Association (NFPA) 70E standard entitled, "Electrical Safety Requirements for Employee Workplaces." With respect to the information contained in Table 3-3.9.1, see the Board's response to Mr. Hosler's oral comment.

II. Oral Comments

Oral comments received at the August 17, 2000, Public Hearing

Mr. Art Murray, Assistant Business Manager, International Brotherhood of Electrical Workers (IBEW), Local Union 1245

Comment No. 1

Mr. Murray stated that he was a participant in the advisory committee for Section 2320.2.

Mr. Murray has a concern with the reference to 250-volts in the proposal and believes insulated gloves should be required for work on energized systems starting at 50-volts rather than the 250-volts to ground indicated in the proposal. Mr. Murray believes that Federal OSHA regulations mandate the use of insulated gloves for work on energized systems starting at 50-volts.

Mr. Murray stated that his letter, dated May 10, 2000 to Mr. Hauptman, referenced the National Electrical Safety Code (NESC) as well as the Federal Register dated January 31, 1994. The NESC Rule 441 A.1. states in part, "the employee will not approach and will not contact energized parts operated at 50-volts to 300-volts unless one of the following is met."

Rule 441 A.1.b. states that the employee must be insulated from energized parts.

Response

Board staff is unable to identify a Federal OSHA mandate for the use of insulated gloves on energized systems starting at 50-volts. The use of insulated gloves are an option in 29 CFR 1910.335, (Safeguards for Personnel Protection) for employee protection from energized conductors along with other protective measures such as insulated tools, barriers, personal protective equipment/shields, etc. This is consistent with the proposed requirements of LVESO, Section 2320.2.

Mr. Murray referenced the National Electric Safety Code – 1993, Rule 441 in his comment.

Rule A.1. of this code states, in part, that employees shall not contact exposed energized parts operating at 50 – 300-volts, unless; 1) The line or part is de-energized; 2) The employee is insulated from the line or part. Insulated electrical protective equipment rated for the voltages involved, such as tools, gloves, or gloves with sleeves are used; or 3) The energized line or part is insulated from the employee and from any other line or part at a different potential. The use of insulated gloves is an option for protection and not a mandate at 50-volts. In addition, Federal OSHA, Region IX has reviewed the Board's standards comparison (side-by-side), dated July 7, 2000, for this rulemaking proposal and finds the proposed changes are "at least as effective as" the Federal Standard.

The Board does not believe modification to the proposal is necessary as a result of this comment.

Comment No. 2

Mr. Murray made additional comments related to the Federal Register, January 31, 1994 for 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution; Electrical Protective Equipment; Final Rule. Mr. Murray referenced various sections of pages 4380 – 4385 of the January 31, 1994 Federal Register as rationale that Federal OSHA mandates the use of insulated gloves at 50-volts.

Response

The scope and application paragraphs of 29 CFR 1910.269 state that these regulations cover the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. Board staff is unable to identify language mandating the use of insulated gloves at 50-volts without other protective options that would be specifically related to the LVESO of Title 8. The Board does concur with Mr. Murray that rationale on page 4385 of the above referenced Federal Register indicates that 50-volts has been adopted in the final rule as the low voltage minimum for taking measures to prevent employee contact. However, the rationale states that 50-volts is the cutoff for "taking measures" to prevent

employee contact. The Federal rationale does not mandate the use of insulating gloves and it should be noted that the requirements contained in Section 2320.2 are intended to prevent, isolate or insulate employees from any contact with energized parts/conductors.

The Board staff believes that 29 CFR Subpart S, 1910.301 - 399 would be applicable to electrical safe work practices as the counterpart regulations to Section 2320.2. In addition, as stated in the response to Comment No. 1, Federal OSHA, Region IX has reviewed the Board's standards comparison (side-by-side), dated July 7, 2000, for this rulemaking proposal and finds the proposed changes are "at least as effective as" the Federal Standard. The Board does not believe modification to the proposal is necessary as a result of this comment.

Comment No. 3

Mr. Murray further commented on several draft proposals from Federal OSHA. The Federal language discusses what is required at 50 to 300-volts and states that the hazards proposed by installations energized at 50 to 300-volts are the same as those followed in many other work places and requires the use of protective equipment.

Response

The Board concurs that energized parts or conductors between 50 and 300-volts can be hazardous to workers. This is especially true depending on the conditions and working environment (i.e., working in wet areas, confined areas, and areas without sufficient illumination). Section 2320.2 requires the use of proper work techniques, suitable personnel protective equipment including eye protection, insulating gloves, barriers, barricades and insulating materials to avoid contact with energized parts or conductors. The proposed regulations in Section 2320.2 do not permit direct contact with energized parts or conductors. The proposal requires insulated gloves be used for work on energized parts in excess of 250-volts to ground. The Board believes that the proposal may be superior to the requirements of Federal OSHA in that Federal OSHA's regulations do not specify the voltage at which insulated gloves must be used. Therefore, the Board does not believe modification to the proposal is necessary as a result of this comment. Also, see the responses to Comments No. 1 and 2.

The Board thanks Mr. Murray for his comments and participation in the Board's rulemaking process.

Mr. Steve Hosler (not representing any particular agency, organization or employer)

Comment No. 1

Mr. Hosler commented that the National Fire Protection Association (NFPA) 70E standard entitled, "Electrical Safety Requirements for Employee Workplaces" had been adopted by NFPA and a year 2000 edition of the standard is available. Mr. Hosler stated the NFPA 70E standard has a matrix or chart for the use of personal protective equipment. Mr. Hosler submitted a copy of Table 3-3.9.1 (Hazard Risk Category Classification) which is contained in the 70E standard. Mr. Hosler stated the chart in Table 3-3.9.1 under the heading "Panelboards rated 240-volts and below" recommends the use of insulated gloves for work on energized parts, including voltage

testing. Mr. Hosler stated this appears to be in conflict with the proposal [Section 2320.2(a)(3)], which requires the use of insulated gloves at 250-volts.

Response

There are a number of National Consensus Standards with recommendations that are not adopted by California in Title 8. The NFPA 70E standard has not been adopted or incorporated by reference in California's Title 8, Electrical Safety Orders. The requirements contained in Section 2320.2 of the proposal are minimum standards for work on energized equipment or systems. The proposed rulemaking addresses the Division of Occupational Safety and Health's concern that electrical injuries and fatalities are occurring to electrical workers while performing work on energized 480/277-volt systems without adequate personal protection (i.e., insulated gloves).

Furthermore, in addition to the requirement for insulated gloves at 250-volts to ground, the proposed rulemaking has other requirements to protect workers from energized electrical conductors below 250-volts. The Electrical Safety Orders mandate that only "qualified persons" may work on energized equipment or conductors. Additionally, proper work techniques, suitable personal protective equipment, barriers, or approved insulating material is to be used to prevent accidental contact with energized parts. Therefore, the Board does not believe that modification to the proposal is necessary as a result of this comment.

Comment No. 2

In response to the dialogue of Board members, Mr. Hosler stated that the NFPA 70E standard does not call for insulated gloves to be used at 50-volts and above. However, it says that electrical safety related work practices apply from 50-volts and above.

Response

See the Board's response to Mr. Art Murray's comment No. 3. The Board thanks Mr. Hosler for his comments and participation in the Board's rulemaking process.

Ms. Victoria Bradshaw, Board Member

Ms. Bradshaw asked if the Federal counterpart regulations to Section 2320.2 require the use of insulated gloves in the range of 50 – 300-volts. She further asked if the proposal was in conflict with Federal OSHA's counterpart regulation for the use of insulated gloves.

Response

See the Board's response to Mr. Art Murray's oral comments No. 1 through 3.

Ms. Sopac Tompkins, Board Member

Comment No. 1

Ms. Tompkins asked if the advisory committee discussed the reason why the proposal [subsection (a)(3)] requires insulated gloves at 250-volts.

Response

The advisory committee discussed the type and severity of accidents to electrical workers and determined that most of the accidents are occurring on 480/277-volt systems. It was discussed that work on an energized 277-volt conductor generating from a 480-volt electrical system requires the use of insulated gloves. The requirement for insulated gloves at 250-volts to ground would allow for any voltage fluctuations on energized 277-volt conductors and ensure that employers understand that the gloves are required when working on any energized conductor of a 480/277-volt system. The threshold at 250 volts to ground would not mandate the use of insulated gloves for lower voltage circuits such as 120/240 electrical systems.

Comment No. 2

Ms. Tompkins stated there was a letter in the Public Hearing materials opposed to the proposal and she asked if there was a consensus at the advisory committee.

Response

Large and small electrical contractors participated in the advisory committee and there was a general consensus reached regarding the requirements of the proposal.

DETERMINATION OF MANDATE

This regulation does not impose a mandate on local agencies or school districts as indicated in the Initial Statement of Reasons.

ALTERNATIVES CONSIDERED

The Board invited interested persons to present statements or arguments with respect to alternatives to the proposed regulation. No alternative considered by the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the adopted action.